



# Mineral Resources

The Department of Mineral Resources (DMR) assumes the custodianship of all mineral resources in South Africa on behalf of its citizens. To this end, the DMR promotes and regulates the Minerals and Mining Sector for transformation, growth and development as well as ensures that all South Africans derive sustainable benefit from the country's mineral wealth.

Various specialised divisions of the DMR and associated institutions are responsible for the administration of the mining and regulations and for promoting the development of the industry. Mining is regulated by three branches, namely the Mineral Policy and Promotion Branch, Mineral Regulation Branch and the Mine Health and Safety Inspectorate.

The Mineral Policy and Promotion Branch is responsible for formulating mineral related policies and helps promote the mining and minerals industry of South Africa to make it attractive to investors. The branch consists of four Chief Directorates:

- Mineral Policy, which develops new policies, reviews existing policies and amends legislation to promote investment growth and achieve transformation in the minerals and mining industry
- Economic Advisory Services that undertakes macroeconomic research and analysis, to inform Executive Management and the department in their engagements with industry stakeholders
- Mineral Promotion promotes mineral development and advises on trends in the mining industry to attract additional investment
- Mine Environmental Management that provides strategic guidance to mine environmental management and mine closure issues, including the management of derelict and ownerless mines.

The South African mining and minerals industry has played a key role in the country's economic development, which has transformed South Africa into the most industrialised country in Africa. It has also been the principal driver of the current infrastructure network, which now underpins jobs in many other sectors. The South African government's development policies, the National Development Plan (NDP) and the New Growth Path (NGP), both recognise the critical role that mining contributes in growing investments, exports, gross domestic product (GDP) and job creation. In this respect government, organised labour and industry have, through the Mining Industry Growth, Development and Employment Task Team (MIGDETT) undertaken several initiatives aimed at resolving the challenges facing the industry.

Other policy interventions aimed at addressing structural imbalances and tackle high levels of unemployment, poverty and inequality have either been developed or are currently being developed. Principal among these are the National Development Plan (NDP), Developmental Growth Path (DGP), Industrial Policy Action Plan (IPAP), the Ten Year Innovation Strategy as well as the Beneficiation Strategy. The IPAP identifies areas where employment could be leveraged and Key Action Plans (KAPs) to achieve the employment growth.

The mining industry is a well-established and resourceful sector of South Africa's economy and has a high degree of technical expertise as well as the ability to mobilize capital for new development. It has provided the impetus for the development of an extensive and efficient physical infrastructure and has contributed greatly to the establishment of the country's secondary industries. With the diversity and abundance of its natural resources, South Africa is a leading producer and supplier of a range of minerals and produced approximately 53 different minerals from 1 712 mines and quarries in 2013. Gold was produced from 53 mines, platinum-group metals (PGMs) from 43 mines, coal from 143 mines and diamonds from 388 mines, all as primary commodities.

The mining industry remains one of the biggest contributors to the country's gross domestic product; however, unrest in the industry has led to stoppages in mining production that have hampered growth, according to figures released by Statistics South Africa and the South African Reserve Bank in July 2014.

Government's industrialisation policy calls for a paradigm shift in mineral development, strategic investment in assets to maximise long-term growth beneficiation projects, enhanced value of exports, increased sources for consumption of local content, and creation of opportunities for sustainable jobs.

In 2014, the Mineral Beneficiation Action Plan was being developed to advance local value-addition across five mineral value-chains, namely iron-ore and steel, platinum group metals, polymers, titanium and mining inputs. The Department of Trade and Industry (dti) also worked on a plan which will be a component of the Industrial Policy Action Plan (IPAP).

The platinum and gold sectors had been negatively affected by the persistent global economic market environment, which had an adverse bearing on their long-term viability.

The rescue plan is expected to enable the department to find appropriate government-wide measures for appropriate sector-wide responses,

with particular focus on supply and demand side interventions to position them along a recovery path and a trajectory of long-term sustainability through the well-established tripartite structure of Mining Growth, Development and Employment Task Team.

Platinum and gold were among the largest sectors of South Africa's mining industry in terms of employment, investment and revenue generation.

The strategic goals for the Department of Mineral Resources (DMR) are to:

- promote and facilitate an increase in mining activity and in value added to mineral resources extracted in South Africa
- implement transformation policies that redress past imbalances through broader participation in the mineral sector
- provide a framework for managing health and safety risks, enforce compliance and promote best practice in the mineral sector
- promote sustainable resource management, contribute to skills development and the creation of sustainable jobs in the mining sector
- contribute to a reduction of the adverse impacts of mining on the environment
- attract, develop and retain appropriate skills and ensure the optimal utilisation of resources
- implement risk management strategies and promote corporate governance.

## Legislation and policies

Some key legislation and policies relating to the DMR are the:

- Mineral and Petroleum Resources Development Act (MPRDA), 2002 (Act 28 of 2002). The promulgation of the MPRDA of 2002 in 2004 introduced a policy of equal access to South Africa's mineral resources. This democratic mineral dispensation introduced the policy of socio-economic responsibility, which was to be achieved through the application of Black Economic Empowerment (BEE) Policy by ensuring that historically disadvantaged South Africans are brought into the mainstream of mining. However, challenges experienced in implementing these policies resulted in the need to review the MPRDA of 2002. The objectives of the review are to:
  - provide for a detailed consultation process
  - support the beneficiation strategy
  - streamline the licensing process to avoid delays and inefficiencies
  - provide for enhanced punitive measures
  - improve the current construct of the Act and remove ambiguities, and provide clarity on the mining of associated minerals.

- Mineral Health and Safety Inspectorate of the DMR, established in terms of the Mine Health and Safety Act, 1996 (Act 29 of 1996) as amended, which is responsible for protecting the health and safety of mine workers and people affected by mining activities.
  - The Council for Geoscience (CGS) was established in 1993 under the Geoscience Act, 1993 (Act 100 of 1993).
  - Geoscience Amendment Act, 2010 (Act 16 of 2010), expands the functions of the CGS by:
    - mandating the CGS to be the custodian and curator of geotechnical information; to be a national mandatory advisory authority in respect of geohazards related to infrastructure development; to undertake exploration and prospecting research in the mineral and petroleum sectors; and to add to the functions of the council
    - putting mechanisms in place to address problems associated with infrastructure development on dolomitic land
    - empowering the CGS to be the custodian of all geotechnical data to compile a complete geotechnical risk profile of the country
    - enabling the CGS to become the custodian of technical information relating to exploration and mining
  - Refocusing the objectives of the CGS to promote the search for and exploitation of any mineral in the country and to act as a national advisory authority in the areas of geohazards and geo-environmental pollution.
  - During 2010, the DMR unveiled the revised Mining Charter 2010, which updates and expands upon a set of empowerment targets with emphasis on a target of 26% black ownership of the country's mining assets by 2014.
  - The Beneficiation Strategy was approved by Cabinet in June 2011. To ensure its efficacy, certain amendments to all relevant legislation will be effected. These include the Precious Metals Act, 2005 (Act 37 of 2005), the Diamond Amendment Act, 2005 (Act 29 of 2005), and Section 26 of the MPRDA of 2002. Five value chains were prioritised from the selected commodities in the strategy, namely:
    - iron and steel: beneficiating iron ore, chrome, manganese, nickel and vanadium
    - energy commodities: focusing on coal and uranium
    - auto catalytic converters and diesel particulate filters: beneficiating PGM
    - pigment and titanium metal production
    - jewellery manufacturing: to increase the beneficiation of platinum group metals, diamonds and gold.
  - The draft Mineral and Petroleum Resources Development Amendment Bill, which was introduced to Parliament in May 2013. The draft Bill aims to enhance provision for the beneficiation of minerals to promote industrialisation and contribute to the nation's objectives of job creation and economic growth as envisaged in the National Development Plan (NDP).
- African Exploration Mining and Finance Corporation Bill 2015 (AEMFC Bill): The department is in the process of developing a draft Bill referred to as the African Exploration Mining and Finance Corporation Bill, 2015. The draft Bill has been forwarded to the Office of the Chief State Law Adviser (OCSLA) for pre-certification. The OCSLA has certified that the draft Bill conforms to the requirements of the Constitution. The draft Bill will be published for public comments upon Cabinet approval. The purpose of the AEMFC Bill is to provide for:
- establishment of African Exploration Mining and Finance Corporation as a creature of statute
  - consolidation of the directly held State interest in mining assets
  - objects and functions of the African Exploration Mining and Finance Corporation
  - constitution of its Board and the management of the African Exploration Mining and Finance Corporation by the Board
  - finances of the African Exploration Mining and Finance Corporation
  - Chief Executive Officer and the staff of the African Exploration Mining and Finance Corporation.
- Other mining policy and legislative amendments Chapter XVI of the Mining Rights Act, (Act 20 of 1967) in the form of the Precious Metals Act, 2005 (Act 37 of 2005)
- The Diamonds Act, 1986 (Act 56 of 1986) in the form of the Diamonds Amendment Act, 2005 (Act 29 of 2005), and the Diamonds Second Amendment Act, 2005 (Act No 30 of 2005)
- Geosciences Amendment Act, 2010 (Act 16 of 2010) and The Geoscience Amendment Act of 2010) Draft Regulations
- The Housing and Living Conditions Standards for the Mining and Mineral Industry, 2009
- The Codes of Good Practice for the Mining and Mineral Industry, 2009
- Section 22 (5) Guidelines
- the 1998 White Paper on the Minerals and Mining Policy for South Africa, which provides the framework for the transparent and efficient regulation of the mineral resources and mineral industry.

### Beneficiation strategy

The National Jewellery Forum brings together mining and jewellery manufacturing associations and government, with the view to creating entrepreneurs with the requisite skills to enable South Africa to become a global jewellery hub.

Jewellery manufacturing is one of the five key value chains identified in the Beneficiation Strategy.

### Budget and funding

The budget allocation of R1,394 billion for the 2014/15 financial year.

### Role players

#### Mining Qualifications Authority (MQA)

The State's influence within the mineral industry is not only confined to orderly regulation and the promotion of equal opportunity for all its citizens and investors, but also participates in mining operations through state-owned companies (SOCs) such as Alexkor, African Exploration Mining and Finance Corporation (Pty) Ltd (AEMFC) and the Industrial Development Corporation (IDC).

All stakeholders in the industry need to intensify skills-development efforts, to make certain that the mining industry operates in a sustainable and competitive environment.

The future of mining in the country largely depends on the successful implementation of skills development initiatives.

Particular focus is placed on artisan and artisan aid as well as other technical skills. Capacity building within the department and associated institutions has also been prioritised in respect of identified critical areas of skills shortage and necessary interventions have been introduced, which include learnership programmes and bursary schemes.

The MQA was established as a sector education and training authority and facilitates the development of appropriate knowledge and skills in the mining, minerals and jewellery sectors to:

- enable the development and transformation of the sector
- contribute to the health, safety and competitiveness of the sector
- improve access to quality education and training for all
- redress past inequalities in education and training.

The MQA is responsible for:

- developing and implementing a sector skills plan
- developing unit standards and qualifications for the sector

- establishing, registering, administering and promoting learnerships and apprenticeships
- maintaining the quality of standards, qualifications and learning
- disbursing grants from the skills-development levy.

#### Chamber of Mines

Corporate restructuring of the South African mining industry remains an ongoing exercise. The introduction of the Mining Charter in South Africa was aimed at transforming the mining industry to redress historical imbalances, so that the industry is aligned with the changes in the country's overall transformation of its social, political and economic landscape. The transformation of the mining industry has included the consolidation of ownership through minority buy-outs, separation of large diversified companies into two or more specialised companies as well as the purchase of South African mining assets by foreign companies.

The Chamber of Mines of South Africa is a voluntary, private sector employers' organisation founded in 1889, three years after gold was discovered on the Witwatersrand. The Chamber is an association of mining companies and mines operating in the gold, coal, diamond, platinum and other mineral commodity sectors. Today, the organisation acts as the principal advocate of the major policy positions endorsed by mining employers. The Chamber represents the formalised views of its membership to various organs and spheres of government, and to other relevant policy-making and opinion-forming entities, both within and outside the country.

#### South African Mining Development Association (SAMDA)

SAMDA, which was formed in 2000 as a junior mining initiative by a group of people associated with various South African junior and BEE mining companies, aims to create an enabling environment for raising finance, developing technical and other skills, practising responsible environmental management and sustainable development as well as the maintenance of standards of good practice in the junior mining sector.

#### Voluntary Associations

- The Southern African Institute of Mining and Metallurgy (SAIMM), was founded 115 years ago in 1894. The SAIMM is a professional institute with local and international links aimed at assisting member's source news and views about technological developments in the mining, metallurgical and related sectors

as well as embracing a professional code of ethics

- South African Colliery Managers Association (SACMA)
- Association of Mine Managers South Africa (AMMSA)
- Geological Society of South Africa (GSSA)
- Engineering Council of South Africa (ECSA)
- South African for Natural Scientific Professions (SACNASP).

### South African Diamond and Precious Metals Regulator (SADPMR)

The SADPMR regulates the diamond, platinum and gold industries and accelerates beneficiation in the jewellery industry. The SADPMR's objectives are to:

- ensure that precious metal and diamond resources are exploited and developed in the best interests of all South Africans
- promote equitable access to and local beneficiation of precious metals and diamonds
- promote the development of precious metal and diamond enterprises
- advance broad-based socio-economic empowerment
- ensure compliance with the Kimberley Process Certification Scheme (KPCS).

Its functions regarding diamonds include:

- implementing, administering and controlling all matters relating to the purchase, sale, beneficiation, import and export of diamonds
- establishing diamond exchange and export centres to facilitate the buying, selling, export and import of diamonds.

While the South African Diamond Board has an essentially regulatory role, the SADPMR has a promotional role as well.

By administering licences and export approvals, the SADPMR ensures that local demand for diamonds and precious metals is catered for, and that there is growth in local beneficiation of diamonds and precious metals.

### Council for Mineral Technology and Research (Mintek)

The Council for Mineral Technology (Mintek) assists the minerals industry to operate more effectively by developing and making available the most appropriate and cost-effective mineral recovery and mineral beneficiation technologies.

It is engaged in the full spectrum of minerals research: from the mineralogical examination of ores to the development of processing, extraction and refining technologies and also conducts research into: the production of added value products and feasibility and economic studies. Much of this work is carried out in close liaison

Southern African leaders have made renewed calls for regional economic integration and cross-border infrastructure development as the Southern African Development Community (SADC) Summit got underway here in August 2014. SADC Heads of State met for their two-day summit in the resort town of Victoria Falls as slow economic growth and high rates of unemployment continue to torment the region. The beneficiation of minerals coming out of SADC took centre stage. The goal for SADC to drive short and long-term economic growth could be realised if only the region could benefit its minerals.

with the local and international minerals and metallurgical industries.

Mintek is involved in research into the use of nanotechnology for medical applications of gold as well as giving effect to the Hydrogen Strategy, in partnership with the departments of Mineral Resources, Science and Technology and Trade and Industry.

This is intended to create future demand for gold and platinum, in keeping with the national objective of achieving 20% global market share of platinum catalysis by 2020.

### Mine Health and Safety Council (MHSC)

The Mine Health and Safety Inspectorate (MHSI) is responsible for implementing mine health and safety legislation. The Inspectorate ensures the safe mining of minerals under healthy working conditions and is represented in the various provinces by principal inspectors.

The branch is comprised of two subprogrammes which are: Mine Health and Safety (Regions) responsible for audits, inspections, investigations, enquiries, enforcing the Mine Health and Safety Act and its provisions, examination services and providing professional advice; and Governance Policy and provide technical support to regional offices, chair tripartite structures and facilitate HIV and AIDS work in the sector.

Through the Mine Health and Safety Council (MHSC), the inspectorate provides leadership and participates in initiatives and activities of tripartite institutions to respond to current health and safety challenges. The MHSC is a national public entity (schedule 3A) established in terms of the Mine Health and Safety Act, No 29 of 1996 as amended. The main task of the Council is to advise the Minister of Mineral Resources on occupational health and safety legislation and research outcomes focused on improving and promoting health and safety in South African mines. The MHSC continues to respond to health and safety challenges through implementation of focused programmes addressing milestones agreed upon by stakeholders (labour, State and employers) during their health and safety summit in 2003. Resolutions made included that the

mining sector will achieve a 20 percent decline in fatality and injury rates per year and eliminate Silicosis and Noise Induced Hearing Loss by 2013.

By 2014, the Mine Health and Safety Act was being reviewed comprehensively to:

- strengthen enforcement provisions; to simplify the administrative system for the issuing of fines
- reinforce offences and penalties; to substitute and remove ambiguities in certain definitions and expressions
- effect certain amendments necessary to ensure consistency with other laws, particularly the Mineral and Petroleum Resources Development Act, 2002 (MPRDA)

### Council for Geoscience

The Council for Geoscience (CGS) undertakes geological mapping and carries out studies pertaining to the identification, nature, extent and genesis of ore deposits and also maintains national databases of the country's geoscientific data and information.

The CGS is also able to provide commercial geoscientific services.

The CGS participates in various Southern African Development Community (SADC) projects aimed at promoting the economic development of the Southern African sub-continent.

International cooperative projects that have been carried out, or are in progress, include geological mapping, geochemical and geophysical surveys, and the production of maps in many countries, either on a bilateral basis or collaboratively in the SADC region.

### State Diamond Trader

The (SDT) main business is to buy and sell rough diamonds to promote equitable access to and beneficiation of diamond resources. The main aim of the SDT is to address distortions in the diamond industry and correct historical market failures to develop and grow South Africa's diamond cutting and polishing industry.

The SDT is a state owned-entity established in terms of Section 14 of the Diamonds Amendment Act 2005, Act(29 of 2005). The company is classified as a Schedule 3b entity of the Public Finance Management Act (PFMA).

The SDT sells to approved customers through the SDT's application and approval process. The entity is eligible by law and proclamation to purchase up to 10% of the run of mine from all diamond producers in South Africa.

The SDT is permitted to purchase up to 10% of South African diamond production by carats and value. during 2013 – 14 it was able to purchase

only 3% by carats and 4% by value of the rough diamonds it inspected.

### Petroleum Agency South Africa (PASA)

PASA promotes exploration for onshore and offshore oil and gas resources and their optimal development on behalf of government, as designated in terms of the Mineral and Petroleum Resources Development Act (MPRDA). The Agency regulates exploration and production activities, and acts as the custodian of the national petroleum exploration and production database.

### African Mining Partnership (AMP)

The AMP, whose main function is to drive the New Partnership for Africa's Development (Nepad) mining initiatives, was established during the African Mining Minister's meeting in Cape Town in February 2004. South Africa, as a major role player in this body, has played an important role as the Secretariat, in hosting as well as coordinating the affairs of the AMP. The AMP merged with the African Union Conference of Ministers Responsible for Mineral Resources Development.

### International Organisations/Associations Association of African Diamond Producing Countries (ADPA)

ADPA is an association of diamond producing African countries, 11 of which have full membership while seven only enjoy observer status. The Association is chaired on a rotational basis and in July 2012, Ghana took over chairpersonship from the Democratic Republic of Congo during the annual Council of Ministers' meeting held in Accra, Ghana. The ADPA Secretariat was in consultation with the Council of Mining Ministers to host the meeting later in 2014, following postponement of the 2013 meeting which was supposed to be held in Guinea Conakry. However, the 2014 Council of Mining Minister's meeting could not be held due elections and the Ebola outbreak in 2013 and 2014 respectively.

The main focus of ADPA revolves around the implementation of aligned policies and strategies intended to maximize the benefits derived from revenues of diamonds across the African continent. In so doing ADPA explores the development of a best practice document that will promote the realisation of harmonised policies across Africa with a goal to increase foreign investments into the diamond sector for the benefit of all member States.

### The Kimberley Process (KP)

South Africa is one of the founding members of the Kimberley Process (KP), which brought into

existence the Kimberley Process Certification Scheme (KPCS). The KP was established when diamond producing countries convened in Kimberley, South Africa in May 2000, to discuss ways to stem the trade in “conflict diamonds” and ensure that the diamond trade was not fuelling armed conflicts. In December 2000, the United Nations General Assembly adopted a landmark Resolution 55/56 of 2000, which supported the establishment of an international certification scheme for rough diamonds.

By November 2002, negotiations between governments, the international diamond industry and civil society organisations resulted in the creation of the KPCS, which was launched in Kimberley, South Africa in 2003. As one of the founding members of the KPCS, South Africa played a pivotal role in the establishment of the KPCS as well as the harmonisation of the regulatory framework relating to the sale and export of diamonds. The KPCS has 54 participants representing 81 countries that counts for 99,8% of the global production of rough diamonds. The KPCS core document (statutes) governs the global production of rough diamonds and stipulate the objectives, definitions, internal controls and, most importantly, minimum requirements that each participant must comply with.

The People Republic of China hosted KPCS Intercessional and Plenary meetings in June and November 2014, respectively. The Republic of Angola assumed KPCS Chairpersonship from 1 January 2015 for the next 12 months.

### Projects and initiatives

With significant resources of gold, uranium, chrome, manganese, PGM, titanium minerals, vanadium, coal, limestone, vermiculite and zirconium, South African mining real estate remains attractive for development.

South Africa has significant known reserves and resources of mineral commodities, with almost 60 minerals being actively mined and prospects for exploitation of an additional two new minerals in the short to medium term. A large number of these known reserves were discovered using conventional exploration methodologies. For this reason, there still lies considerable residual potential for discovery of world-class deposits using modern exploration technology.

This is further supported by existing mining infra-structure, which enables investors to leverage maximum value from their investment while simultaneously contributing to socio-political improvement.

### Shale-gas exploration

The potential of shale-gas exploration and exploitation provides an opportunity for South Africa to begin exploring the production of its own fuel and marks the beginning of the reindustrialisation of the economy.

The proposed regulations on petroleum exploration and exploitation prescribe good international petroleum industry practices and standards, which enhance safe exploration and production of all petroleum and will further ensure that petroleum exploration is conducted in a socially and environmentally balanced manner.

The technical regulations provide for the assessment of the potential impact of the proposed activities on the environment; the protection of fresh water resources and mechanisms for the co-existence of shale gas exploitation and the Square Kilometre Array project.

The South African Government would have a free-carried shareholding of 20% in entities producing shale gas in the Karoo in the future.

### Stability in the mining sector

In June 2014, the Minister of Mineral Resources, Adv Ngoako Ramatlhodi, welcomed the signing of a settlement reached between labour and business, following a protracted strike in the North West platinum belt. The parties signed the settlement agreement after months of negotiations.

In his first few days in office, the Minister brought the parties together to resolve the impasse in the negotiations. He further established an interdepartmental technical team to propose solutions to the stalemate. Earlier in June, the Minister announced that he would formally be withdrawing from the process, as enough progress had been made for the parties to continue engaging and reach a settlement. The end of the strike meant the DMR could focus on other matters affecting the mining sector.

### Mine health and safety

In November 2014, the Mine Health and Safety Council summit under the theme “Every mine

In August 2014, the Minister in The Presidency, Jeff Radebe, announced that government and the mining sector planned to partner with municipalities to make the family units of mineworkers more liveable and have the feel of home. The Minister commended the mining sector for collaborating with government to convert single-sex hostels into family units. The move forms part of the objectives set out in the Mining Charter, which seeks to transform the industry. One of the prominent requirements in the charter is for mining companies to improve housing and the living conditions of mineworkers.

worker returning home unharmed every day, striving for zero harm” was held in South Africa. The social impact of mining incidents permeates through to society.

Injuries and diseases contracted at work have the potential to exacerbate the problem of unemployment, poverty and overburdens the social security and primary health care systems.

The notion of every mine worker returning home unharmed every day, requires a holistic overhaul and redefining of the industry and its role in society.

### Illegal mining

In June 2014, an illegal mining incident in Benoni led to the loss of life. Illegal mining is not only dangerous, but can lead to incidents such as this one. Through the Illegal Mining Stakeholder Forums established, the DMR will continue implementing measures to eradicate these illicit activities. The measures include the sealing off of access holes, and working with law enforcement agencies to apprehend criminals. The Minister of Mineral Resources commended the active role played by the police to date, including in the recent arrest of members of a syndicate who were involved in multi-million rand illegal gold mining activities in the Carletonville area.

The illegal activity is not only a threat to the health of the illegal miners, but also affected the economy negatively.

An estimated that R6 billion was being lost to illegal mining annually.

### Integrated licencing

The construct of the Mining Regulatory Framework is fragmented and has been identified as one of the binding constraints to the growth and competitiveness of the South African mining sector. The departments of mineral resources, water affairs and environmental affairs have agreed on the modalities of integrating the time frames and processes of environmental authorisation and water-use licensing for prospecting and mining operations.

The modalities include the departments implementing the National Environmental Management Act, 1998 (Act 107 of 1998) for the industry to be regulated by a single environmental piece of legislation.

Processes of environmental authorisation will be contained within the same time frames that apply to prospecting and mining authorisations, and the process of approving water use licences will also be finalised within the same time frames.

This represents a significant improvement in service delivery, both in terms of certainty regarding security of tenure when mining or prospecting

In August 2014, the Mining Legotla, a platform which brings together key stakeholders in the South African mining industry and other role players, got underway in Midrand. Since its launch in 2012, the leggotla has become the premier mining think-tank in the sector, and serves to explore key trends and policy shifts in the mining environment. The summit comes against a backdrop of unprecedented labour unrest, changing legislation and rising costs. The leggotla took place under the theme, “Building on the Contribution of Mining since the Advent of Democracy: The Past We Acknowledge and the Future We Build Together.” Mining is a key job driver and foreign exchange earner for the country and has been the backbone of the economy for decades. The event was a collaboration between the Chamber of Mines of South Africa, the Department of Mineral Resources and the National Union of Mineworkers.

rights are issued and in terms of improved turnaround times resulting from the processes being finalised in parallel rather than sequentially as was previously the case.

### Job creation and sustainable development

Economic distress in the industry resulted in large scale retrenchments. As a result job creation targets were not achieved.

Following the review of the 2004 Mining Charter, which is subject to a 10-year review time frame, the DMR embarked on a process of reviewing and amending the 2004 Mining Charter to strengthen and sharpen its efficacy in driving transformation and competitiveness in the mining sector.

The implementation of the mining charter has been given 10 years to effect transformation. In view of this window the department conducted a baseline assessment of compliance by the mining industry with the Mining Charter and produced a preliminary report in 2009.

A second assessment report, in 2014 was produced as a continuation of the initial assessment to ensure that the department quantifies the compliance levels over the 10-year window.

The socio-economic challenges brought about by communities living close to mining operations has necessitated departmental review of levels of compliance with the Mining Charter.

### Rehabilitation of mines

The mine rehabilitation programme has had a positive effect on communities where the projects are including economic growth owing to sourcing labour and material locally. The programme also results in improved health and well-being of communities. The rehabilitation programme reduces the risk of asbestos fibres from historical asbestos mine sites that human and animal being exposed to.

A total of 284 jobs were created as part of the programme, which was 24 jobs more than initially

projected for the year. The job creation element of the rehabilitation programme is one of the key requirements for all the rehabilitation projects. This contributes to some of the priorities of the NDP.

A report by actuarial scientists on the estimated State liability for the rehabilitation of derelict and ownerless mines commissioned by the department is under consideration.

The recommendations will assist the department in planning the rehabilitation programme, with a lucid indication of the resource requirements.

An annual review of the liability has also been completed. Both the initial report and the review report confirm the need for fiscal support to the department for rehabilitation work.

### Acid mine drainage (AMD)

Land owners are responsible for acid mine drainage (AMD) after the land has been sold. The Constitutional Court made the ruling in February 2014, after it dismissed an application by Harmony Gold. The application was for leave to appeal against the Supreme Court of Appeal's judgement that the company remained liable for the cost of pumping and treating AMD despite the fact that it no longer owns or mines the land. The Supreme Court of Appeal held that a directive issued under the National Water Act regarding the pumping and treatment of AMD remained binding on the owner of land after it had sold the land, notwithstanding the fact that a new entity now mines that area but does not contribute to the costs of pumping and treating. The gold producer argued that the plain text of the National Water Act does not permit that interpretation.

In March 2014, regulatory and other measures were put in place to address the serious environmental consequences of AMD. To complement efforts and ensure that the mining sector makes its fair contribution towards continuing AMD expenses, consultations were initiated on an appropriate funding mechanism, such as an environmental levy or equivalent instrument. According to the National Budget Review, the benefit in addressing this harmful negative environmental consequence will accrue to society at large and mining companies operating in affected regions.

AMD pumps have been installed in the Witwatersrand area in March 2014. These pumps would ensure the area's AMD remains below the Environmental Critical Level (ECL). The pumps were installed at the newly built Central Basin Pump Station in Witwatersrand. The pumps were operational at the end of April, ensuring that the Central Basin remained below the ECL,

protecting the environment the country's water courses. Along with the pumps, the construction of High Density Sludge treatment plants will neutralise the AMD before it was discharged into the environment. The installation and construction of the pumps, treatment plant and monitoring shafts commenced in January 2013 and is valued at R319 million. Once the treatment plant is operational, an average of 57 million litres of AMD per day will be treated and discharged into the Klipriver.

In May 2014, the pumping, treatment and release of treated AMD for the testing of the Central Basin AMD treatment plant commenced. The treatment plant was launched by the Inter-Ministerial Committee (IMC) on AMD and aimed at implementing the short-term action plan in the Western, Central and Eastern Basins of the Witwatersrand Goldfields.

By November 2014, emergency work was completed in the Western, Central and Eastern Basins. An immediate solution was proposed for the Western Basin, which included upgrading the Rand Uranium (Gold 1) (Randfontein) AMD/mine water plant. The plant treated 30 MI of AMD a day. There have been reports of improvements in surface and groundwater quality however additional refurbishment is urgently required to eradicate decant.

A short-term solution was proposed for the Central Basin, and a new AMD pump station, neutralisation and waste disposal facility was constructed at the south-west vertical shaft in Germiston. The project was commissioned in April 2014 and facilities were pumping, treating and discharging 56 MI of AMD daily by November 2014.

A solution similar to that of the Central Basin was proposed for Grootvlei Mine No. 3 Shaft, in Springs, which falls under the Eastern Basin. The project commenced in June 2014 and the projected commissioning date is for December 2015. The DMR set an operational target to neutralise 84 MI of AMD daily for this facility.

### Resources

South Africa's mineral wealth is typically found in the following well-known geological formations and settings:

In July 2014, the Minister of Mineral Resources officially launched the drill operation for the first deep-water well, south of Mossel Bay. The well, operated by petroleum company Total, adds to South Africa's oil and gas industry profile, which has the potential to contribute to economic growth and jobs. Drilling in deep-water is novel to South Africa and would bring with it avenues for skills transfer in the deep-water exploration space for South Africa. Deep-water drilling is a process of oil and gas exploration.

- the Witwatersrand Basin yields some 93% of South Africa's gold output and contains considerable uranium, silver, pyrite and osmiridium resources
- the Bushveld Complex is known for PGMs (with associated copper, nickel and cobalt mineralisation), chromium and vanadium-bearing titanium-iron ore formations as well as large deposits of industrial minerals, including fluorspar and andalusite
- the Transvaal Supergroup contains enormous resources of manganese and iron ore
- the Karoo Basin extends through Mpumalanga, KwaZulu-Natal, the Free State as well as Limpopo, hosting considerable bituminous coal and anthracite resources
- the Phalaborwa Igneous Complex hosts extensive deposits of copper, phosphate, titanium, vermiculite, feldspar and zirconium ores
- kimberlite pipes host diamonds that also occur in alluvial, fluvial and marine settings
- heavy mineral sands contain ilmenite, rutile and zircon
- significant deposits of lead-zinc ores associated with copper and silver are found in the Northern Cape near Aggeneys.

### Gold

South Africa dominated global gold production in the 20th century. There are 35 large-scale gold mines operating in South Africa, including the record setting TauTona mine, which extends 3,9 km underground. TauTona means "great lion" in Setswana. South Africa accounts for 11% of the world's gold reserves.

Cape Town hosts the annual Indaba Mining Conference, one of the largest gatherings of mining stakeholders, which attracts nearly 10 000 people representing more than 1 000 companies.

### Coal

The coal sector is important for the South African economy. The accelerated demand for coal, accompanied by an increase in international coal prices, has invariably changed the buying patterns and structure of the local coal export industry. The emergence of the export market for lower-grade coal has presented government with a challenge in that it has constrained the availability of coal that was historically sold to Eskom.

In the national energy plan, coal remains an important component of the country's future energy mix and requirements. Government resolved that certain minerals such as coal should be declared strategic national resources, based

on the balance of evidence. The findings of the coal resources and reserves report concluded by the CGS were released in mid-2013.

### Platinum group metals (PGM)

Platinum, palladium, rhodium, osmium, ruthenium and iridium occur together in nature alongside nickel and copper. Platinum, palladium and rhodium, the most economically significant of the PGMs, are found in the largest quantities.

The remaining PGMs are produced as co-products. South Africa is the world's leading platinum and rhodium producer, and the second-largest palladium producer after Russia. South Africa's production is sourced entirely from the Bushveld Complex, the largest known PGM-resource in the world.

### Platinum

South Africa accounts for 96% of known global reserves of the platinum group metals (PGMs).

The Merensky Reef, stretching from southern Zimbabwe through to the Rustenburg and Pretoria regions, is the centre of platinum mining in South Africa, playing host to companies such as Rustenburg Platinum Mines and Bafokeng Rasimone Platinum Mines.

Amplats is the industry leader in the mining, marketing, and distribution of platinum. Amplats produces 40% of the world's total platinum group metals.

Other key platinum mining companies in South Africa include BHP Billiton and Impala Platinum.

Platinum mining in South Africa is growing. The establishment of projects such as the R7,1billion Twickenham Expansion Project, 100 km south-east of Polokwane, will see the production of 250 000 t/m pure platinum.

The well-underway Impala Platinum No. 20 Shaft Project, which is geared to produce 185 000 ounces of platinum a year on the Bushveld Complex.

### Palladium

South Africa is the world's second-largest palladium producer. All of South Africa's production is sourced from the Bushveld Igneous Complex, which hosts the world's largest resource of PGMs.

Palladium and platinum is more abundant than any of the other PGMs.

### Ferrous minerals

South Africa is the largest producer of chromium and vanadium ores and a leading supplier of their alloys. It is also a significant producer of iron and manganese ores, and a minor producer of ferrosilicon and silicon metal. Ferrous

minerals are produced from some 32 mines and 23 ferroalloys smelters.

### Copper

Palabora, a large copper mine, smelter and refinery complex managed by the Palabora Mining Company at the town of Phalaborwa in Limpopo is South Africa's only producer of refined copper. Producing about 80 000 t per year, it supplies most of South Africa's copper needs and exports the balance.

Useful byproduct metals and minerals include zirconium chemicals, magnetite and nickel sulphate as well as small quantities of gold, silver and platinum. Palabora's large block cave copper mine and smelter complex employs approximately 2 200 people. Palabora also owns a nearby vermiculite deposit, which is mined and processed for sale worldwide. Vermiculite is a versatile industrial mineral.

### Chrome

South Africa accounts for 74% of chrome reserves globally.

### Manganese

South Africa accounts for 26% of manganese reserves, but exploitation of the mineral has not reflected its development potential.

### Diamonds

South Africa, the site of the biggest diamond discovery, plans to process a greater proportion of its gems locally to keep more profit in the country.

Government wants to cut and refine 70% of the diamonds mined in South Africa by 2023. Only 4% were processed locally.

### Industrial minerals

There are some 680 producers of industrial minerals in South Africa, of which almost half are in the sand and aggregate sector.

There are some 153 producers of clays (brick-making and special), 40 limestone and dolomite, 79 dimension stone, 28 salt and 20 silica producers. Bulk consumption of industrial minerals is realised in the domestic market, as most are low-priced commodities and sold in bulk, making their economic exploitation highly dependent on transport costs and distance to markets.

### Mineral Regulation

The Mineral Regulation Branch was created following the promulgation of the MPRDA Act of 2002. Chief directorates have been created under the Mineral Regulation Branch for the

following regions:

- northern
- central
- western
- coastal.

Each chief directorate is responsible for overseeing the activities performed by the Directorate Licensing and Legal Compliance in the three regional offices or directorates.

The functions of the Mineral Regulation branch are to:

- administer the MPRDA of 2002 and other applicable legislation to ensure the granting of prospecting and mining rights in terms of the Act
- promote mineral development including urban renewal, rural development and BEE
- address past legacies with regard to derelict and ownerless mines and enforce legislation regarding mine rehabilitation by means of regulated environmental management plans
- coordinate and liaise with national, provincial and local government structures for efficient governance.

### Geology

South Africa has a long and complex geological history dating back more than 3 700 billion years. Significant fragments of this geology have been preserved, and along with them mineral deposits.

The preservation of so much Archaean geology, dating back more than 2 500 million years, has resulted in the Archaean Witwatersrand Basin, as well as several greenstone belts, being preserved.

### Barberton mountain land

This beautiful and rugged tract of country with some of the oldest rocks on Earth is found south of Nelspruit, Mpumalanga.

The greenstone formations represent the remains of some of the earliest clearly decipherable geological events on the Earth's surface.

Silica-rich layers within the greenstone have revealed traces of a very early life form – minute blue-green algae.

Granites surround the formations and gneisses that are more than 3 000 million years old. Gold, iron ore, magnesite, talc, barite and verdite are mined in the area.

### Witwatersrand

The geology and gold mines of the Witwatersrand (Ridge of White Waters) are world famous.

More than 50 055 t of gold have been produced from seven major goldfields distributed in a crescent-like shape along the 350-km long

basin, from Welkom in the Free State in the south-west, to Evander in the east.

The geology of the region can be seen at many outcrops in the suburbs of Johannesburg. The sequence is divided into a lower shale-rich group and an upper sandstone-rich group. The latter contains the important gold-bearing quartz-pebble conglomerates.

### Bushveld Complex and escarpment

The Bushveld Complex extends over an area of 65 000 km<sup>2</sup> and reaches up to 8 km in thickness. It is by far the largest known layered igneous intrusion in the world and contains most of the world's resources of chromium, PMGs and vanadium.

The impressive igneous geology of the Bushveld Complex can best be viewed in Mpumalanga, in the mountainous terrain around the Steelpoort Valley. The imposing Dwars River chromitite layers, platinum-bearing dunite pipes, the discovery site of the platinum-rich Merensky Reef, and extensive magnetite-ilmenite layers and pipes near Magnet Heights and Kennedy's Vale are in this area.

The Great Escarpment of Mpumalanga is one of South Africa's most scenic landscapes. This area features the Bourke's Luck Potholes, which have become a major tourist attraction.

### Drakensberg Escarpment and Golden Gate Highlands National Park

The main ramparts of the Drakensberg range, reaching heights of more than 3 000 m, lie in KwaZulu-Natal and on the Lesotho border. These precipitous mountains are the highest in southern Africa and provide the most dramatic scenery.

They were formed by the partial erosion of a high plateau of basaltic lava, which is more than 1 500 m thick, and covers the Clarens sandstones. Prior to its erosion, the continental basalt field covered significantly more of the continent.

The uKhahlamba-Drakensberg Park, which covers 243 000 ha, has been declared a world heritage site. More than 40% of all known San cave paintings in southern Africa are found here.

The scenic Golden Gate Highlands National Park in the Free State features spectacular sandstone bluffs and cliffs. The sandstone reflects a sandy desert environment that existed around 200 million years ago. Dinosaur fossils are still found in the area.

### Karoo

Rocks of the Karoo Supergroup cover about two-thirds of South Africa and reach a thickness

of several thousand metres. The sedimentary portion of this rock sequence reveals an almost continuous record of deposition and life, from the end of the Carboniferous into the mid-Jurassic periods, between 300 million and 180 million years ago.

Karoo rocks are internationally renowned for their wealth of continental fossils, and particularly for the fossils of mammal-like reptiles that show the transition from reptiles to early mammals, and for their early dinosaur evolution. During this long period of the Earth's history, southern Africa was a lowland area in the centre of the Gondwana supercontinent.

Initially, the prehistoric Karoo was a place of vast glaciation. It then became a shallow inland sea, before this was replaced by huge rivers, with lush flood plains and swampy deltas, which dried out to form a sandy desert. Finally, vast outpourings of continental basaltic lava accompanied by the break-up of Gondwana occurred.

### Diamond fields

Kimberlite is the primary host-rock of diamonds and was first mined as weathered "yellow ground" from the Kimberley mines, starting in 1871 at Colesberg koppie, now the site of the Big Hole of Kimberley. At increasing depths, less-weathered "blue ground" that continued to yield diamonds was encountered.

The discovery of kimberlite-hosted diamonds was a key event in South Africa's economic and social development, and paved the way for the later development of the Witwatersrand goldfields.

The Orange and Vaal rivers' alluvial diamond fields and the rich West Coast marine diamond deposits all originated by erosion from primary kimberlite pipes.

### Meteorite impact sites

Impacts by large meteoritic projectiles played a major role in shaping the surface of the Earth. The Vredefort Dome is the oldest and largest visible impact structure known on Earth and is a World Heritage Site. It lies some 110 km south-west of Johannesburg, in the vicinity of Parys and Vredefort in the Free State and North West.

About 40 km north of Pretoria is the small bowl-shaped Tswaing meteorite-impact crater. Just one km in diameter, this is one of the best-preserved and accessible impact craters of its kind on Earth. It was created about 220 000 years ago when a meteorite of about 50 m wide slammed into the Earth, and is one of the few impact craters containing a crater lake.

### Pilanesberg

The Pilanesberg Complex and National Park in North West is a major scientific attraction which includes a number of unique geological sites.

The complex consists of an almost perfectly circular, dissected mountain massif some 25 km in diameter, making it the third-largest alkaline ring complex in the world. The geology reflects the roots of an ancient volcano that erupted some 1,5 billion years ago. The remains of ancient lava flows and volcanic breccias can be seen.

The dominant feature of the complex is the concentric cone sheets formed by resurgent magma that intruded ring fractures created during the collapse of the volcano. There are old mining sites for fluorite and dimension stone, and a non-diamond-bearing kimberlite pipe in the region.

### Cradle of Humankind

This World Heritage Site extends from the Witwatersrand in the south to the Magaliesberg in the north, and is considered to be of universal value because of the outstanding richness of its fossil hominid cave sites.

The Sterkfontein area near Krugersdorp is the most prolific and accessible fossil hominid site on Earth. It comprises several scientifically important cave locations, including Sterkfontein, Swartkrans, Drimolen, Kromdraai, Gladysvale and Plover's Lake, all of which have produced a wealth of material crucial to palaeoanthropological research.

### Table Mountain and the Cape Peninsula

Table Mountain is South Africa's best known and most spectacular geological feature, comprising a number of major rock formations.

The earliest of these are the deformed slates of the Malmesbury Group, which formed between 560 million and 700 million years ago.

Coarse-grained Cape granite intruded about 540 million years ago. The Table Mountain Group, which started forming about 450 million years ago, consists of basalt, reddish mudstone and sandstone that is well exposed along Chapman's Peak.

Overlying this is the light-coloured sandstone that makes up the higher mountains and major cliff faces of the Cape Peninsula, as far south as Cape Point.

Much younger sandy formations make up the Cape Flats and other low-lying areas adjacent to Table Mountain. The Table Mountain Group continues further inland across False Bay in the strongly deformed Cape Fold Belt.



